



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/940,518	08/29/2001	Loong-Tak Lim	13201.00051	5213
27160	7590	05/11/2004	EXAMINER	
PATENT ADMINSTRATOR KATTEN MUCHIN ZAVIS ROSENMAN 525 WEST MONROE STREET SUITE 1600 CHICAGO, IL 60661-3693			GAKH, YELENA G	
			ART UNIT	PAPER NUMBER
			1743	
DATE MAILED: 05/11/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/940,518

Applicant(s)

LIM ET AL.

Examiner

Yelena G. Gakh, Ph.D.

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 106-133 and 135-154 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 106-133 and 135-154 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. The RCE, Amendment and Remarks, filed on 04/30/04 are acknowledged. Claims 1-105 are cancelled. Claims 106-133 and 135-154 are pending in the Application.

#### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 106-121 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 106 recites a step of “collecting gaseous acetaldehyde” followed by the step of “extracting gaseous acetaldehyde”. It would be more apparent to have the step of extracting before collecting, since to collect the gas it first needs to be extracted. If however “extracting” stands for “withdrawing a portion of [or sampling] collected gaseous acetaldehyde with an airtight syringe”, the examiner suggests to use this expression instead of “extracting ...”.

For claim 116 it is not clear, if the polymer sample disposed within the airtight container is made of the same polymer as the preform.

For claims 118 and 119 it is not clear, how the whole preform, and especially the bottle, can be placed inside the airtight container (this is the way the limitations are read for the parent claim).

Claims 140-154 are not clear as to what is meant by the step of “injecting an acetaldehyde-reactive reagent coated on an inert reagent carrier from within the needle” in claim 140? First, if the reagent is removed from the needle, it should be a step of **ejecting**, rather than injecting. Second, it is not clear from the claim the way it is written, why the solid reagent coated on the inert carrier should be ejected from the needle? Does it mean that it first is placed within the needle?

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. **Claims 106-133 and 135-139** are rejected under 35 as being unpatentable over Villain et al. (J. Appl. Polymer Chem., 1994) in view of Moore (US 5,332,548), Drake (US 3,784,358, IDS) and a well-known MBTH test for detecting aldehydes, see e.g. Chen (Analyst).

Villain compares methods for detecting acetaldehyde (AA) from PET performs and bottles by the solid/gas headspace chromatography, liquid/gas headspace chromatography and two colorimetric methods, including 2,4-dinitrophenylhydrazones (2,4-DNPH)-based colorimetry, involving reagent solution. For colorimetric techniques AA is extracted from the solution and reacted with the reagent solution. For solid/gas headspace chromatography AA is

Art Unit: 1743

collected in the airtight bottle with a polymer sample inside the bottle with sampling AA with a syringe.

Villain does not disclose measuring gaseous AA with a dry reagent coated on an inert carrier with the reagent placed into a syringe barrel.

Moore teaches a method for detecting a gaseous or volatile analyte, including formaldehyde and AA, emitted or released from a solid material, including polymers, using a dry reagent coated on an inert carrier and placed on a support for color reaction with the analyte. The inert carrier is any inert porous material, including anhydrous aluminum.

Moore does not teach using developer for his reagent or placing the reagent into the syringe barrel.

Drake discloses a dry reagent coated on the substrate for selective measuring aldehydes in a liquid form, the reagent comprising 3-methyl-2-benzothiazolinone hydrazone hydrochloride monohydrate (MBTH). The dry reagent on the support is placed into the syringe barrel. Drake does not specifically disclose oxidizing developer to obtain detectable response. However, it is well known in the art, as disclosed by e.g. Chên, that MBTH test for aldehydes requires using oxidizers to develop color [“formaldehyde was sampled with the use of a standard miniature glass fibre filter coated with 3-methyl-2-benzothiazolinone hydrazone hydrochloride (MBTH). The formaldehyde hydrazone formed [i.e., the adduct of formaldehyde (HCHO) and MBTH] was desorbed from the filter with water and then oxidized by an iron(III) chloride-sulfamic acid solution to form a blue cationic dye in acidic medium which was subsequently determined by visible absorption at 628 nm” (Chên, Abstract)]. Drake uses oxidizers, including “sodium periodate, potassium periodate, ..., lead tetraacetate” (col. 3, lines 30-35) for oxidizing glycol to aldehyde, and therefore they are present in solution to develop color in MBTH test.

It would have been obvious for anyone of ordinary skill in the art to modify Villain’s method for colorimetric detection of AA emitted from polymers to perform it for AA in a gaseous state with a dry reagent coated on the substrate, as disclosed by Moore, because detecting gaseous AA instead of analyzing solution containing AA is more accurate and straightforward procedure, as emphasized by Moore. It would have been obvious to use Drake’s reagent MBTH requiring the presence of an oxidizing developer, as taught by Chên, instead of

Art Unit: 1743

Moore's dry reagent, because MBTH is a selective and highly sensitive reagent for detecting aldehydes, as taught by Drake.

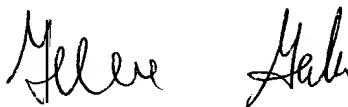
It would have been obvious for anyone of ordinary skill in the art to accelerate a developing step by heating oxidizing developer or agitating developer while contacting the reagent substrate reacted with aldehyde with the developer, because these are conventional steps of accelerating any chemical reaction. Measuring AA concentration with spectrophotometer or visually by comparing developed color with a chart are standard techniques for any colorimetric analysis.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yelena G. Gakh, Ph.D. whose telephone number is (571) 272-1257. The examiner can normally be reached on 9:30 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Yelena G. Gakh  
5/6/04

Handwritten signature of Yelena G. Gakh in black ink.